## ABSTRACT OF THE DISCLOSURE

After an internal combustion engine 1 has started to operate, a changing timing is detected at which a humidity represented by the output signal of a humidity sensor 23 disposed downstream of a hydrocarbon adsorbent 12 changes to a tendency to monotonously increase from a low humidity to a high humidity. Data representing a total amount of moisture carried by an exhaust gas emitted by the internal combustion engine 1 to the hydrocarbon adsorbent 12 up to the changing timing is acquired as a deterioration evaluating parameter. The deteriorated state of the hydrocarbon adsorbent is evaluated based on the deterioration evaluating parameter. The changing timing is detected as a timing at which the relative humidity represented by the output signal of the humidity sensor 23 has changed from a low humidity to a high humidity by a preset value. The preset value is variably set in order to compensate for characteristic changes of the humidity sensor 23 and variations of individual humidity sensors. The deteriorated state of the hydrocarbon adsorbent can thus adequately be monitored while compensating for the characteristic changes of the humidity sensor and the variations of individual humidity sensors.